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Benjamin

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(54) **DOUBLY RESONANT PUSH-PULL
FLEXTENSIONAL**

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174; 310/337, 321

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(57) **ABSTRACT**

The present invention relates to a flextensional transducer device comprising a multi-resonant shell and push-pull driving system for driving the shell so as to provide at least two tunable resonant modes, thereby increasing the operational bandwidth of the device. The push-pull driving system is formed by four rings of active drive material grouped to operate as two opposing push-pull pairs. The shell has a dog-bone configuration with two arcuately shaped interior web portions joined to the pairs of rings, end sections joined to the interior web portions, and a central concave section which functions as the primary radiating surface. Upon application of a desired current to the push-pull ring pairs, the interior web portions are caused to vibrate, which vibrations are transmitted to the end sections and the central concave section. By raising or lowering the bending stiffness of the interior web portions, the end sections, and the central concave section, one can selectively tune the modal resonance of the shell.

7 Claims, 1 Drawing Sheet

